

**Water Quality Assessment
Vallecito Creek
Upper Valley Sanitation Inc.; Upper Valley Sanitation, Inc. WWTF**

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I. Water Quality Assessment Summary

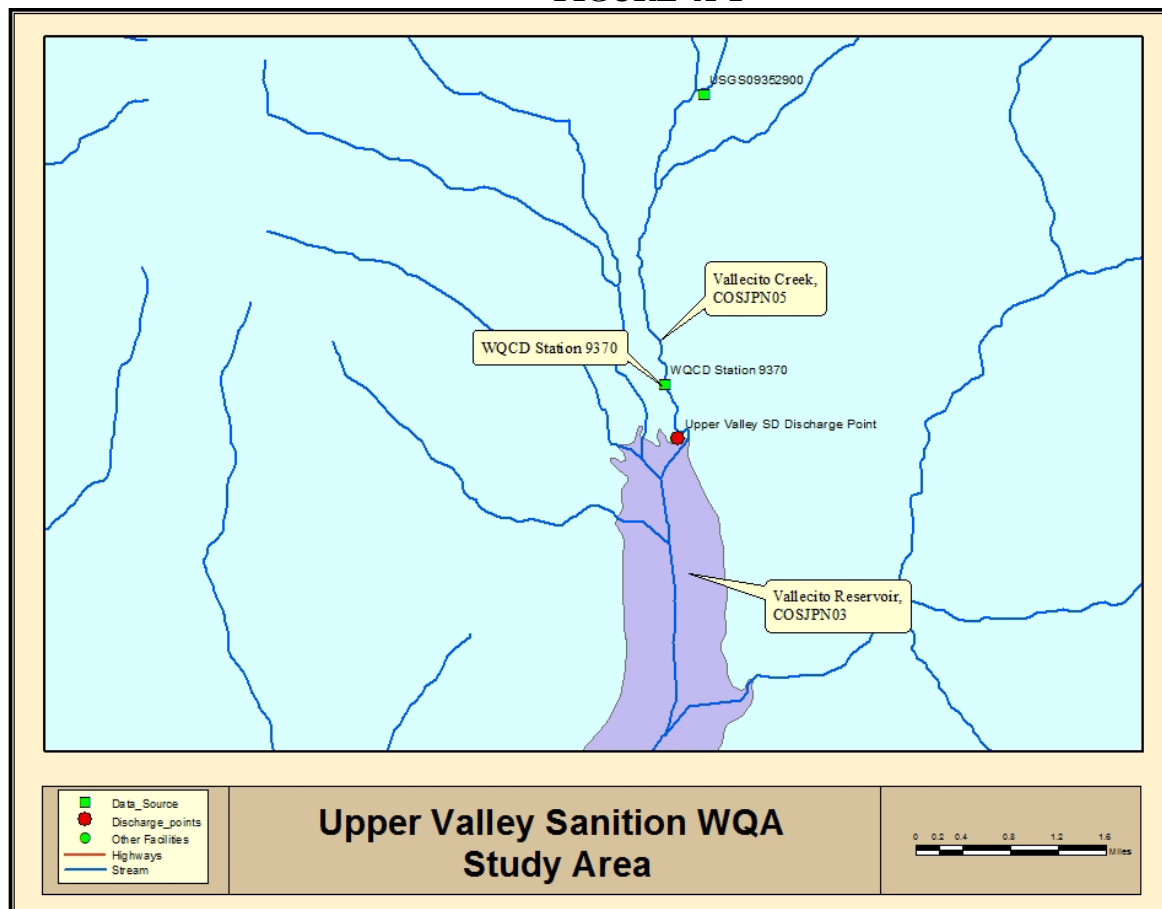
Table A-1 includes summary information related to this WQA. This summary table includes key regulatory starting points used in development of the WQA such as: receiving stream information; threatened and endangered species; 303(d) and Monitoring and Evaluation listings; low flow and facility flow summaries; and a list of parameters evaluated.

Table A-1 WQA Summary					
Facility Information					
Facility Name		Permit Number	Design Flow (max 30-day ave, MGD)	Design Flow (max 30-day ave, CFS)	
Upper Valley Sanitation, Inc. WWTF		CO0047147	0.13	0.20	
Receiving Stream Information					
Receiving Stream Name	Segment ID	Designation	Classification(s)		
Vallecito Creek	COSJPN05	Undesignated	Aquatic Life Cold 1, Recreation Class E, Agriculture, Water Supply		
Low Flows (cfs)					
1E3 (1-day)		7E3 (7-day)	30E3 (30-day)	Ratio of 30E3 to the Design Flow (cfs)	
13		15	16	80:1	
Regulatory Information					
T&E Species	303(d) (Reg 93)	Monitor and Eval (Reg 93)	Existing TMDL	Temporary Modification(s)	Control Regulation
No	None. However downstream segment COSJPN03 is listed for Aquatic Life Use (Hg Fish Tissue)	None	No	None	Regulation 39
Pollutants Evaluated					
Ammonia, <i>E. coli</i> , TRC, Temp, Salinity					

II. Introduction

The water quality assessment (WQA) of Vallecito Creek near the Upper Valley Sanitation, Inc. (WWTF), located in La Plata County, is intended to determine the assimilative capacities available for pollutants found to be of concern. This WQA describes how the water quality based effluent limits (WQBELs) are developed. These parameters may or may not appear in the permit with

limitations or monitoring requirements, subject to other determinations such as reasonable potential analysis, evaluation of federal effluent limitation guidelines, implementation of state-based technology based limits, mixing zone analyses, 303(d) listings, threatened and endangered species listing, or other requirements as discussed in the permit rationale. Figure A-1 contains a map of the study area evaluated as part of this WQA.

FIGURE A-1

The Upper Valley Sanitation, Inc. WWTF discharges to Vallecito Creek, which is stream segment COSJPN05. This means the San Juan Basin, Los Pinos Sub-basin, Stream Segment 05. This segment is composed of the “Mainstem of Vallecito Creek from the boundary of the Weminuche Wilderness Area to Vallecito Reservoir.”. Stream segment COSJPN05 is classified for Aquatic Life Cold 1, Recreation Class E, Water Supply and Agriculture.

No other stream segments are considered in this WQA even though the downstream segment, Vallecito Reservoir is located just downstream from the discharge. The Division at this time believes that the small facility discharge will be fully mixed with the available low flow of 80 cfs.

Information used in this assessment includes data gathered from the Upper Valley Sanitation, Inc. WWTF, the Division and the U.S. Geological Survey (USGS). The data used in the assessment consist of the best information available at the time of preparation of this WQA analysis.

III. Water Quality Standards

Narrative Standards

Narrative Statewide Basic Standards have been developed in Section 31.11(1) of the regulations, and apply to any pollutant of concern, even where there is no numeric standard for that pollutant. Waters of the state shall be free from substances attributable to human-caused point source or nonpoint source discharges in amounts, concentrations or combinations which:

for all surface waters except wetlands;

(i) can settle to form bottom deposits detrimental to the beneficial uses. Depositions are stream bottom buildup of materials which include but are not limited to anaerobic sludge, mine slurry or tailings, silt, or mud; or (ii) form floating debris, scum, or other surface materials sufficient to harm existing beneficial uses; or (iii) produce color, odor, or other conditions in such a degree as to create a nuisance or harm existing beneficial uses or impart any undesirable taste to significant edible aquatic species or to the water; or (iv) are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life; or (v) produce a predominance of undesirable aquatic life; or (vi) cause a film on the surface or produce a deposit on shorelines; and

for surface waters in wetlands;

(i) produce color, odor, changes in pH, or other conditions in such a degree as to create a nuisance or harm water quality dependent functions or impart any undesirable taste to significant edible aquatic species of the wetland; or (ii) are toxic to humans, animals, plants, or aquatic life of the wetland.

In order to protect the Basic Standards in waters of the state, effluent limitations and/or monitoring requirements for any parameter of concern could be put in CDPS discharge permits.

Standards for Organic Parameters and Radionuclides

Radionuclides: Statewide Basic Standards have been developed in Section 31.11(2) and (3) of The Basic Standards and Methodologies for Surface Water to protect the waters of the state from radionuclides and organic chemicals.

In no case shall radioactive materials in surface waters be increased by any cause attributable to municipal, industrial, or agricultural practices or discharges to as to exceed the following levels, unless alternative site-specific standards have been adopted. Standards for radionuclides are shown in Table A-2.

Table A-2 Radionuclide Standards	
Parameter	Picocuries per Liter
Americium 241*	0.15
Cesium 134	80
Plutonium 239, and 240*	0.15
Radium 226 and 228*	5
Strontium 90*	8
Thorium 230 and 232*	60
Tritium	20,000

*Radionuclide samples for these materials should be analyzed using unfiltered (total) samples. These Human Health based standards are 30-day average values for both plutonium and americium.

Organics: The organic pollutant standards contained in the Basic Standards for Organic Chemicals Table are applicable to all surface waters of the state for the corresponding use classifications, unless alternative site-specific standards have been adopted. These standards have been adopted as “interim standards” and will remain in effect until alternative permanent standards are adopted by the Commission. These interim standards shall not be considered final or permanent standards subject to antibacksliding or downgrading restrictions. Although not reproduced in this WQA, the specific standards for organic chemicals can be found in Regulation 31.11(3).

In order to protect the Basic Standards in waters of the state, effluent limitations and/or monitoring requirements for radionuclides, organics, or any other parameter of concern could be put in CDPS discharge permits.

The aquatic life standards for organics apply to all stream segments that are classified for aquatic life. The water supply standards apply only to those segments that are classified for water supply. The water + fish standards apply to those segments that have a Class 1 aquatic life and a water supply classification. The fish ingestion standards apply to Class 1 aquatic life segments that do not have a water supply designation. The water + fish and the fish ingestion standards may also apply to Class 2 aquatic life segments, where the Water Quality Control Commission has made such determination.

Because the Vallecito Creek is classified for Aquatic Life Cold 1, with a water supply designation, the water supply, water + fish, and aquatic life standards apply to this discharge.

Salinity

Salinity: Regulation 61.8(2)(l) contains requirements regarding salinity for any discharges to the Colorado River Watershed. For industrial dischargers and for the discharge of intercepted groundwater, this is a no-salt discharge requirement. However, the regulation states that this requirement may be waived where the salt load reaching the mainstem of the Colorado River is less than 1 ton per day, or less than 350 tons per year. The Division may permit the discharge of salt upon a satisfactory demonstration that it is not practicable to prevent the discharge of all salt. See Regulation 61.8(2)(l)(i)(A)(1) for industrial discharges and 61.8(2)(l)(iii) for discharges of intercepted groundwater for more information regarding this demonstration.

For municipal dischargers, an incremental increase of 400 mg/l above the flow weighted averaged salinity of the intake water supply is allowed. This may be waived where the salt load reaching the mainstem of the Colorado River is less than 1 ton per day, or less than 366 tons per year. The Division may permit the discharge of salt in excess of the 400 mg/l incremental increase, upon a satisfactory demonstration that it is not practicable to attain this limit. See Regulation 61.8(2)(l)(vi)(A)(1) for more information regarding this demonstration.

In addition, the Division's policy, Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops, may be applied to discharges where an agricultural water intake exists downstream of a discharge point. Limitations for electrical conductivity and sodium absorption ratio may be applied in accordance with this policy.

Temperature

Temperature shall maintain a normal pattern of diurnal and seasonal fluctuations with no abrupt changes and shall have no increase in temperature of a magnitude, rate, and duration deemed deleterious to the resident aquatic life. This standard shall not be interpreted or applied in a manner inconsistent with section 25-8-104, C.R.S.

Segment Specific Numeric Standards

Numeric standards are developed on a basin-specific basis and are adopted for particular stream segments by the Water Quality Control Commission. The standards in Table A-3 have been recently assigned to stream segment COSJPN05 and will become effective as of March 30, 2013 in accordance with the *Classifications and Numeric Standards for San Juan River and Dolores River Basins*.

Table A-3
In-stream Standards for Stream Segment COSJPN05
<i>Physical and Biological</i>
Dissolved Oxygen (DO) = 6 mg/l, minimum (7 mg/l, minimum during spawning)
pH = 6.5 - 9 su
E. coli chronic = 126 colonies/100 ml
Temperature June-Sept = 17° C MWAT and 21.7° C DM
Temperature Oct-May = 9° C MWAT and 13° C DM
<i>Inorganic</i>
Total Ammonia acute and chronic = TVS
Chlorine acute = 0.019 mg/l
Chlorine chronic = 0.011 mg/l
Free Cyanide acute = 0.005 mg/l
Sulfide chronic = 0.002 mg/l
Boron chronic = 0.75 mg/l
Nitrite acute = 0.05 mg/l
Nitrate acute = 10 mg/l
Chloride chronic = 250 mg/l
Sulfate chronic = For WS, the greater of ambient water quality as of January 1, 2000 or 250 mg/l
<i>Metals</i>
Dissolved Arsenic acute = 340 µg/l
Total Recoverable Arsenic chronic = 0.02 µg/l
Dissolved Cadmium acute for trout and Dissolved Cadmium chronic = TVS
Total Recoverable Trivalent Chromium acute = 50 µg/l
Dissolved Trivalent Chromium acute and chronic = TVS
Dissolved Hexavalent Chromium chronic = TVS
Dissolved Copper acute and chronic = TVS
Dissolved Iron chronic = For WS, the greater of ambient water quality as of January 1, 2000, or 300 µg/l
Total Recoverable Iron chronic = 1000 µg/l
Dissolved Lead acute and chronic = TVS
Dissolved Manganese chronic = For WS, the greater of ambient water quality as of January 1, 2000, or 50 µg/l
Dissolved Manganese acute and chronic = TVS
Total Recoverable Molybdenum chronic = 160 µg/l
Total Mercury chronic = 0.01 µg/l
Dissolved Nickel acute and chronic = TVS
Dissolved Selenium acute and chronic = TVS
Dissolved Silver acute and Dissolved Silver chronic for trout = TVS
Dissolved Zinc acute and chronic = TVS

Table Value Standards and Hardness Calculations

As metals with standards specified as TVS are not included as parameters of concern for this facility, the hardness value of the receiving water and the subsequent calculation of the TVS equations is inconsequential and is therefore omitted from this WQA.

Total Maximum Daily Loads and Regulation 93 – Colorado’s Section 303(d) List of Impaired Waters and Monitoring and Evaluation List

This stream segment is not listed on the Division’s 303(d) list of water quality impacted streams and is not on the monitoring and evaluation list. However, immediately downstream segment is listed on the Division’s 303(d) list of water quality impacted streams for Aquatic Life Use (Hg Fish Tissue).

IV. Receiving Stream Information**Low Flow Analysis**

The Colorado Regulations specify the use of low flow conditions when establishing water quality based effluent limitations, specifically the acute and chronic low flows. The acute low flow, referred to as 1E3, represents the one-day low flow recurring in a three-year interval, and is used in developing limitations based on an acute standard. The 7-day average low flow, 7E3, represents the seven-day average low flow recurring in a 3 year interval, and is used in developing limitations based on a Maximum Weekly Average Temperature standard (MWAT). The chronic low flow, 30E3, represents the 30-day average low flow recurring in a three-year interval, and is used in developing limitations based on a chronic standard.

To determine the low flows available to the Upper Valley Sanitation, Inc. WWTF, USGS gage station 09352900 (Vallencito Creek Near Bayfield, CO) was used. This flow gage provides a representative measurement of upstream flow because it is located about 4 miles upstream of the Upper Valley Sanitation, Inc. WWTF.

Daily flows from the USGS Gage Station 09352900 (Vallencito Creek Near Bayfield, CO) were obtained and the annual 1E3 and 30E3 low flows were calculated using U.S. Environmental Protection Agency (EPA) DFLOW software. The output from DFLOW provides calculated acute and chronic low flows for each month.

Flow data from September 23, 2003 through September 23, 2012 were available from the gage station. Data from February 1, 2012 through September 23, 2012 were provisional and therefore, are excluded from the dataset. The gage station and time frames were deemed the most accurate and representative of current flows and were therefore used in this analysis.

Based on the low flow analysis described previously, the upstream low flows available to the Upper Valley Sanitation, Inc. WWTF were calculated and are presented in Table A-4.

Table A-4 Low Flows for Vallecito Creek at the Upper Valley Sanitation, Inc. WWTF													
<i>Low Flow (cfs)</i>	<i>Annual</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>
1E3 Acute	13	15	15	16	20	78	62	40	29	27	25	17	13
7E3 Chronic	15	16	15	15	20	78	62	40	29	27	25	16	16
30E3 Chronic	16	16	16	16	20	78	62	40	31	31	25	17	16

During the months of March, April, May, June and July the acute low flow calculated by DFLOW exceeded the chronic low flow. In accordance with Division standard procedures, the acute low flow was thus set equal to the chronic low flow for these months.

The ratio of the low flow of Vallecito Creek to the Upper Valley Sanitation, Inc. WWTF design flow is 80:1.

Note that downstream segment will not be considered in this WQA even though it is immediately downstream from the discharge. The Division believes that the small discharge from the facility will be fully mixed with receiving water before it gets to the downstream segment.

Mixing Zones

The amount of the available assimilative capacity (dilution) that may be used by the permittee for the purposes of calculating the WQBELs may be limited in a permitting action based upon a mixing zone analysis or other factor. These other factors that may reduce the amount of assimilative capacity available in a permit are: presence of other dischargers in the vicinity; the presence of a water diversion downstream of the discharge (in the mixing zone); the need to provide a zone of passage for aquatic life; the likelihood of bioaccumulation of toxins in fish or wildlife; habitat considerations such as fish spawning or nursery areas; the presence of threatened and endangered species; potential for human exposure through drinking water or recreation; the possibility that aquatic life will be attracted to the effluent plume; the potential for adverse effects on groundwater; and the toxicity or persistence of the substance discharged.

Unless a facility has performed a mixing zone study during the course of the previous permit, and a decision has been made regarding the amount of the assimilative capacity that can be used by the facility, the Division assumes that the full assimilative capacity can be allocated. Note that the review of mixing study considerations, exemptions and perhaps performing a new mixing study (due to changes in low flow, change in facility design flow, channel geomorphology or other reason) is evaluated in every permit and permit renewal.

If a mixing zone study has been performed and a decision regarding the amount of available assimilative capacity has been made, the Division may calculate the water quality based effluent limitations (WQBELs) based on this available capacity. In addition, the amount of assimilative capacity may be reduced by T&E implications.

For this facility, 100% of the available assimilative capacity may be used as the facility has not had to perform a mixing zone study, and the discharge is not to a T&E stream segment, and is not expected to have an influence on any of the other factors listed above. However, the facility may require a mixing zone study for the downstream segment.

Ambient Water Quality

The Division evaluates ambient water quality based on a variety of statistical methods as prescribed in Section 31.8(2)(a)(i) and 31.8(2)(b)(i)(B) of the *Colorado Department of Public Health and Environment Water Quality Control Commission Regulation No. 31*, and as outlined in the Division's Policy for Characterizing Ambient Water Quality for Use in Determining Water Quality Standards Based Effluent Limits (WQP-19). Ambient water quality is evaluated in this WQA analysis for use in determining assimilative capacities and in completing antidegradation reviews for pollutants of concern, where applicable.

To conduct an assessment of the ambient water quality upstream of the Upper Valley Sanitation, Inc. WWTF, data were gathered from WQCD Sampling Location 9370 (Vallecito Creek Near Mouth) with data from November 2005 through July 2010. A summary of the upstream data from this source is presented in Table A-5.

Table A-5								
Ambient Water Quality for Vallecito Creek								
<i>Parameter</i>	<i>Number of Samples</i>	<i>15th Percentile</i>	<i>50th Percentile</i>	<i>85th Percentile</i>	<i>Mean</i>	<i>Maximum</i>	<i>Chronic Stream Standard</i>	<i>Notes</i>
Temp (°C)	20	2.6	6.2	13	7.5	18	NA	
DO (mg/l)	20	7.8	9	11	9.3	13	7	
pH (su)	20	7.5	7.9	8.1	8	12	6.5-9	
<i>E. coli</i> (#/100 ml)	19	1	1	63	5	108	126	1
Nitrate+Nitrite as N (mg/l)	20	0	0	0.13	0.056	0.18	NA	2
NH ₃ as N, Tot (mg/l)	20	0	0	0.032	0.0095	0.05	TVS	2
Hardness as CaCO ₃ (mg/l)	20	30	39	72	52	170	NA	
Note 1: The calculated mean is the geometric mean. Note that for summarization purposes, the value of one was used where there was no detectable amount because the geometric mean cannot be calculated using a value equal to zero.								
Note 2: When sample results were below detection levels, the value of zero was used in accordance with the Division's standard approach for summarization and averaging purposes.								

V. Facility Information and Pollutants Evaluated

Facility Information

The Upper Valley Sanitation, Inc. WWTF is located at in the NE 1/4 of the NE 1/4 of S33, T37N, R6W; 671 Mushroom Lane Bayfield, CO 81122; at 37.43546° latitude North and 107.54533° longitude West in La Plata County. The current design capacity of the facility is 0.13 MGD (0.20 cfs). Wastewater treatment is accomplished using a mechanical wastewater treatment process. The technical analyses that follow include assessments of the assimilative capacity based on this design capacity.

Three are nearby facilities within four miles of the proposed Upper Valley Water and Sanitation WWTP expansion. Five Branches Camper Park WWTP (COG-588054) discharges to the upper Los Pinos River, then to Vallecito Reservoir. The Vallecito Resort (COG-588026) discharges to Jack Creek, a tributary to the lower reaches of the Los Pinos River, at a point downstream of Vallecito Reservoir.

These dischargers were evaluated to determine their impacts on this WQA evaluation. Ultimately, these dischargers were not found to affect the assimilative capacity calculations for Vallecito Creek near the proposed Upper Valley Water and Sanitation WWTP expansion due to the significant dilution available relative to the size of the dischargers of concern.

An assessment of the downstream water quality was also conducted to help determine if any additional sources of pollution, either point source or non-point source, contribute significantly to the in-stream water quality. These evaluations also found pollutants at low levels comparable to the in-stream standards. For these reasons, non-point sources were not evaluated as part of this assessment.

Pollutants of Concern

Pollutants of concern may be determined by one or more of the following: facility type; effluent characteristics and chemistry; effluent water quality data; receiving water quality; presence of federal effluent limitation guidelines; or other information. Parameters evaluated in this WQA may or may not appear in a permit with limitations or monitoring requirements, subject to other determinations such as a reasonable potential analysis, mixing zone analyses, 303(d) listings, threatened and endangered species listings or other requirement as discussed in a permit rationale.

There are no site-specific in-stream water quality standards for BOD₅ or CBOD₅, TSS, percent removal, and oil and grease for this receiving stream. Thus, assimilative capacities were not determined for these parameters. The applicable limitations for these pollutants can be found in Regulation No. 62 and will be applied in the permit for the WWTF.

The following parameters were identified by the Division as pollutants to be evaluated for this facility:

- Total Residual Chlorine
- *E. coli*
- Ammonia
- Temperature
- Salinity

Based upon the size of the discharge, the lack of industrial contributors, dilution provided by the receiving stream and the fact that no unusually high metals concentrations are expected to be found in the domestic wastewater effluent, metals are not evaluated further in this water quality assessment.

According to the *Rationale for Classifications, Standards and Designations of the San Juan*, stream segment COSJPN05 is designated a water supply According to the *Rationale for Classifications*,

Standards and Designations of the San Juan, there are no existing public water supply uses downstream from the Upper Valley Sanitation WWTF. For this reason, the nitrate standard, which is applied at the point of intake to a water supply, is not evaluated as part of this analysis.

During assessment of the facility, nearby facilities, and receiving stream water quality, no additional parameters were identified as pollutants of concern.

VI. Determination of Water Quality Based Effluent Limitations (WQBELs)

Technical Information

Note that the WQBELs developed in the following paragraphs, are calculations of what an effluent limitation may be in a permit. The WQBELs for any given parameter, will be compared to other potential limitations (federal Effluent Limitations Guidelines, State Effluent Limitations, or other applicable limitation) and typically the more stringent limit is incorporated into a permit. If the WQBEL is the more stringent limitation, incorporation into a permit is dependent upon a reasonable potential analysis.

In-stream background data and low flows evaluated in Sections II and III are used to determine the assimilative capacity of Vallecito Creek near the Upper Valley Sanitation, Inc. WWTF for pollutants of concern, and to calculate the WQBELs. For all parameters except ammonia, it is the Division's approach to calculate the WQBELs using the lowest of the monthly low flows (referred to as the annual low flow) as determined in the low flow analysis. For ammonia, it is the standard procedure of the Division to determine monthly WQBELs using the monthly low flows, as the regulations allow the use of seasonal flows.

The Division's standard analysis consists of steady-state, mass-balance calculations for most pollutants and modeling for pollutants such as ammonia. The mass-balance equation is used by the Division to calculate the WQBELs, and accounts for the upstream concentration of a pollutant at the existing quality, critical low flow (minimal dilution), effluent flow and the water quality standard. The mass-balance equation is expressed as:

$$M_2 = \frac{M_3 Q_3 - M_1 Q_1}{Q_2}$$

Where,

Q_1 = Upstream low flow (1E3 or 30E3)

Q_2 = Average daily effluent flow (design capacity)

Q_3 = Downstream flow ($Q_1 + Q_2$)

M_1 = In-stream background pollutant concentrations at the existing quality

M_2 = Calculated WQBEL

M_3 = Water Quality Standard, or other maximum allowable pollutant concentration

The upstream background pollutant concentrations used in the mass-balance equation will vary based on the regulatory definition of existing ambient water quality. For most pollutants, existing quality is determined to be the 85th percentile. For metals in the total or total recoverable form,

existing quality is determined to be the 50th percentile. For pathogens such as fecal coliform and *E. coli*, existing quality is determined to be the geometric mean.

For temperature, the highest 7-day mean (for the chronic standard) of daily average stream temperature, over a seven consecutive day period will be used in calculations of the chronic temperature assimilative capacity, where the daily average temperature should be calculated from a minimum of three measurements spaced equally through the day. The highest 2-hour mean (for the acute standard) of stream temperature will be used in calculations of the acute temperature assimilative capacity. The highest 2-hour mean should be calculated from a minimum of 12 measurements spaced equally through the day.

Calculation of WQBELs

Using the mass-balance equation provided in the beginning of Section VI, the acute and chronic low flows set out in Section IV, ambient water quality as discussed in Section IV, and the in-stream standards shown in Section III, the WQBELs for were calculated. The data used and the resulting WQBELs, M_2 , are set forth in Table A-6a for the chronic WQBELs and A-6b for the acute WQBELs.

Where a WQBEL is calculated to be a negative number and interpreted to be zero, the Division standard procedure is to allocate the water quality standard to prevent further degradation of the receiving waters.

Chlorine: There are no point sources discharging total residual chlorine within one mile of the Upper Valley Sanitation, Inc. WWTF. Because chlorine is rapidly oxidized, in-stream levels of residual chlorine are detected only for a short distance below a source. Ambient chlorine was therefore assumed to be zero.

***E. coli*:** There are no point sources discharging *E. coli* within one mile of the Upper Valley Sanitation, Inc. WWTF. Thus, WQBELs were evaluated separately. In the absence of *E. coli* ambient water quality data, fecal coliform ambient data are used as a conservative estimate of *E. coli* existing quality. For *E. coli*, the Division establishes the 7-day geometric mean limit as two times the 30-day geometric mean limit and also includes maximum limits of 2,000 colonies per 100 ml (30-day geometric mean) and 4,000 colonies per 100 ml (7-day geometric mean). This 2000 colony limitation also applies to discharges to ditches.

Temperature:

The 7E3 low flow is 15, resulting in a dilution ratio (7E3 low flow to effluent) of 75. As the discharge is from a Domestic WWTF where the available dilution ratio is > 10:1, in accordance with the Division's Temperature Policy, no temperature limitations are required.

Table A-6a						
Chronic WQBELs						
<i>Parameter</i>	<i>Q₁ (cfs)</i>	<i>Q₂ (cfs)</i>	<i>Q₃ (cfs)</i>	<i>M₁</i>	<i>M₃</i>	<i>M₂</i>
Temp MWAT (°C) June-Sept	16	0.2	16.2	NA	17	17
Temp MWAT (°C) Oct-May	16	0.2	16.2	NA	9	9
<i>E. coli</i> (#/100 ml)	16	0.2	16.2	5	126	9,838
TRC (mg/l)	16	0.2	16.2	0	0.011	0.89

Table A-6b						
Acute WQBELs						
<i>Parameter</i>	<i>Q₁ (cfs)</i>	<i>Q₂ (cfs)</i>	<i>Q₃ (cfs)</i>	<i>M₁</i>	<i>M₃</i>	<i>M₂</i>
<i>E. coli</i> (#/100 ml)	chronic X 2 = acute					19,676
TRC (mg/l)	13	0.2	13.2	0	0.019	1.3

Ammonia: The Ammonia Toxicity Model (AMMTOX) is a software program designed to project the downstream effects of ammonia and the ammonia assimilative capacities available to each discharger based on upstream water quality and effluent discharges. To develop data for the AMMTOX model, an in-stream water quality study should be conducted of the upstream receiving water conditions, particularly the pH and corresponding temperature, over a period of at least one year.

Temperature and corresponding pH data sets reflecting upstream ambient receiving water conditions were available for Vallecito Creek from WQCD Station 9370. Ammonia data were also available from the station. The data, reflecting a period of record from November 2005 through July 2010, were used to establish the setpoint and average headwater conditions in the AMMTOX model. Note that these data covered for the months of March, May, June, July, August, November and November. Data for other months were not available and therefore, the Division standard procedure is to rely on statistically-based, regionalized data for pH and temperature compiled from similar receiving waters.

There were no temperature data available for the Upper Valley Sanitation, Inc. WWTF that could be used as adequate input data for the AMMTOX model. Therefore, the Division standard procedure is to rely on statistically-based, regionalized data for pH and temperature compiled from similar facilities and receiving waters.

The AMMTOX may be calibrated for a number of variables in addition to the data discussed above. The values used for the other variables in the model are listed below:

- Stream velocity = $0.3Q^{0.4d}$
- Default ammonia loss rate = 6/day
- pH amplitude was assumed to be medium
- Default times for pH maximum, temperature maximum, and time of day of occurrence
- pH rebound was set at the default value of 0.2 su per mile

- Temperature rebound was set at the default value of 0.7 degrees C per mile.

The results of the ammonia analyses for the Upper Valley Sanitation, Inc. WWTF are presented in Table A-7.

Table A-7 AMMTOX Results for Vallecito Creek at the Upper Valley Sanitation, Inc. WWTF		
<i>Month</i>	<i>Total Ammonia Chronic (mg/l)</i>	<i>Total Ammonia Acute (mg/l)</i>
January	135	260
February	115	220
March	230	420
April	160	340
May	1,050	1,550
June	800	1,300
July	500	950
August	400	600
September	180	340
October	260	350
November	190	280
December	150	200

VII. Antidegradation Evaluation

As set out in *The Basic Standards and Methodologies for Surface Water*, Section 31.8(2)(b), an antidegradation analysis is required except in cases where the receiving water is designated as “Use Protected.” Note that “Use Protected” waters are waters “that the Commission has determined do not warrant the special protection provided by the outstanding waters designation or the antidegradation review process” as set out in Section 31.8(2)(b). The antidegradation section of the regulation became effective in December 2000, and therefore antidegradation considerations are applicable to this WQA analysis.

According to the *Classifications and Numeric Standards for San Juan River and Dolores River Basins*, stream segment COSJPN05 is Undesignated. Thus, an antidegradation review may be conducted for this segment if new or increased impacts are found to occur. However, the ratio of the flow of Vallecito Creek to the Upper Valley Sanitation WWTF design flow is 123:1 at low flows. Section 31.8 (3)(c) specifies that the discharge of pollutants should not be considered to result in significant degradation of the reviewable waters if the flow rate is greater than 100:1 dilution at low flow. Thus, Section 31.8(3)(c) of the regulations is met and no further antidegradation evaluation is necessary.

Introduction to the Antidegradation Process

The antidegradation process conducted as part of this water quality assessment is designed to determine if an antidegradation review is necessary and if necessary, to complete the required

calculations to determine the limits that can be selected as the antidegradation-based effluent limit (ADBEL), absent further analyses that must be conducted by the facility.

As outlined in the *Antidegradation Significance Determination for New or Increased Water Quality Impacts, Procedural Guidance* (AD Guidance), the first consideration of an antidegradation evaluation is to determine if new or increased impacts are expected to occur. This is determined by a comparison of the newly calculated WQBELs verses the existing permit limitations in place as of September 30, 2000, and is described in more detail in the analysis. Note that the AD Guidance refers to the permit limitations as of September 30, 2000 as the existing limits.

If a new or increased impact is found to occur, then the next step of the antidegradation process is to go through the significance determination tests. These tests include: 1) bioaccumulative toxic pollutant test; 2) temporary impacts test; 3) dilution test (100:1 dilution at low flow) and; 4) a concentration test.

As the determination of new or increased impacts, and the bioaccumulative and concentration significance determination tests require more extensive calculations, the Division will begin the antidegradation evaluation with the dilution and temporary impact significance determination tests. These two significance tests may exempt a facility from further AD review without the additional calculations.

Note that the antidegradation requirements outlined in *The Basic Standards and Methodologies for Surface Water* specify that chronic numeric standards should be used in the antidegradation review; however, where there is only an acute standard, the acute standard should be used. The appropriate standards are used in the following antidegradation analysis.

Significance Tests for Temporary Impacts and Dilution

The ratio of the chronic (30E3) low flow to the design flow is 80:1, and is less than the 100:1 significance criteria. Therefore this facility is not exempt from an AD evaluation based on the dilution significance determination test, and the AD evaluation must continue.

For the determination of a new or increased impact and for the remaining significance determination tests, additional calculations are necessary. Therefore, at this point in the antidegradation evaluation, the Division will go back to the new or increased impacts test. If there is a new or increased impact, the last two significance tests will be evaluated.

New or Increased Impact and Non Impact Limitations (NILs)

To determine if there is a new or increased impact to the receiving water, a comparison of the new WQBEL concentrations and loadings verses the concentrations and loadings as of September 30, 2000, needs to occur. If either the new concentration or loading is greater than the September 2000 concentration or loading, then a new or increased impact is determined. If this is a new facility (commencement of discharge after September 30, 2000) it is automatically considered a new or increased impact.

Note that the AD Guidance document includes a step in the New or Increased Impact Test that calculates the Non-Impact Limit (NIL). The permittee may choose to retain a NIL if certain conditions are met, and therefore the AD evaluation for that parameter would be complete. As the

NIL is typically greater than the ADBAC, and is therefore the chosen limit, the Division will typically conclude the AD evaluation after determining the NIL. Where the NILs are very stringent, or upon request of a permittee, the Division will calculate both the NIL and the AD limitation so that the limitations can be compared and the permittee can determine which of the two limits they would prefer, one which does not allow any increased impact (NIL), or the other which allows an insignificant impact (AD limit).

The non impact limit (NIL) is defined as the limit which results in no increased water quality impact (no increase in load or limit over the September 2000 load or limit). The NIL is calculated as the September 2000 loading, divided by the new design flow, and divided by a conversion factor of 8.34. If there is no change in design flow, then the NIL is equal to the September 2000 permit limitation.

If the facility was in place, but did not have a limitation for a particular parameter in the September 2000 permit, the Division may substitute an implicit limitation. Consistent with the First Update to the AD Guidance of April 2002, an implicit limit is determined based on the approach that specifies that the implicit limit is the maximum concentration of the effluent from October 1998 to September 2000, if such data is available. If this data is unavailable, the Division may substitute more recent representative data, if appropriate, on a case by case basis. Note that if there is a change in design flow, the implicit limit/loading is subject to recalculation based on the new design flow. For parameters that are undisclosed by the permittee, and unknown to the Division to be present, an implicit limitation may not be recognized.

This facility was in place as a discharger prior to September 30, 2000, and therefore the new or increased impacts test must be conducted. As the design flow of this facility has changed from 0.018 MGD to 0.13 MGD, the equations for the NIL calculations are shown below.

For total residual chlorine and fecal coliform (used for E.coli), the limitations from the previous permit with increased discharge flow are used in the evaluation of new or increased impacts.

As for the ammonia, the Division used the maximum ammonia in the DMRs. Note that maximum ammonia was 4 mg/l.

Calculation of Loadings for New or Increased Impact Test

The equations for the loading calculations are given below. Note that the AD requirements outlined in *The Basic Standards and Methodologies for Surface Water* specify that chronic numeric standards should be used in the AD review; however, where there is only an acute standard, the acute standard should be used. Thus, the chronic low flows will be used later in this AD evaluation for all parameters with a chronic standard, and the acute low flows will be used for those parameters with only an acute standard.

$$\begin{aligned} \text{Previous permit load} &= M_{\text{permitted}} \text{ (mg/l)} \times Q_{\text{permitted}} \text{ (mgd)} \times 8.34 \\ \text{New WQBELs load} &= M_2 \text{ (mg/l)} \times Q_2 \text{ (mgd)} \times 8.34 \end{aligned}$$

Where,

$M_{permitted}$	= September 2000 permit limit (or implicit limit) (mg/l)
$Q_{permitted}$	= design flow as of September 2000 (mgd)
Q_2	= current design flow (same as used in the WQBEL calculations)
M_2	= new WQBEL concentration (mg/l)
8.34	= unit conversion factor

Table A-8 shows the results of these calculations and the determination of a new or increased impact.

Calculation of Non-Impact Limitations

The design flow of this facility as of September 30, 2000 was 0.018 MGD. The new design flow of this facility is 0.13 MGD. To determine if new or increased impacts are to occur, the September 2000 permit concentrations need to be adjusted for this new design flow. The equations are shown below.

$$\text{September 2000 permit load} = M_{permitted} \times Q_{permitted} \times 8.34$$

$$\text{Non Impact Limit (NIL)} = \text{September 2000 permitted load} \div \text{New Design Flow} \div 8.34$$

Where,

$M_{permitted}$	= September 2000 permit limit or implicit limit (mg/l)
$Q_{permitted}$	= September 2000 design flow (mgd)
Q_2	= new or current design flow (mgd)
8.34	= Unit conversion factor

Table A-8 shows the results of these calculations and the determination of a new or increased impact.

Table A-8						
Determination of New or Increased Impacts						
Pollutant	Sept 2000 Permit Limit	Sept 2000 Permit Load (lbs/day)	NIL	New WQBEL	New WQBEL Load (lbs/day)	New or Increased Impact
<i>E. coli</i> (#/100 ml)	2000	2168	277	9838	10666	Yes
TRC (mg/l)	0.5	0.54	0.069	0.89	0.96	Yes
NH ₃ , Tot (mg/l)	NA	NA	4	115	125	Yes

For all parameters there are new or increased impacts and in accordance with regulation, the permittee has the option of choosing either the NIL's or ADBAC's. Normally, the Division would assign the NILs as permit limitations, or prescribe monitoring to determine the appropriate implicit limitations as necessary, however, in this case, the NILs are very stringent and therefore the Division will automatically calculate the ADBACs for comparison.

The final two significance determination tests (bioaccumulative and concentration) need to be applied, to determine if AD limits are applicable. For the bioaccumulative test, the determination of the baseline water quality (BWQ), the baseline water quality loading (BWQload), the threshold load (TL) and the threshold load concentration (TL conc) needs to occur. For the concentration test, the BWQ, significant concentration thresholds (SCT) and antidegradation based average concentrations (ADBACs) need to be calculated. These calculations are explained in the following sections, and each significance determination test will be performed as the necessary calculations are complete. The AD low flow may also need to be calculated when determining the BWQ for an existing discharger (as of Sept 2000) when upstream water quality data are used.

Determination of Baseline Water Quality (BWQ)

Consistent with current Division procedures, the BWQ concentrations for all pollutants of concern should be established so that it can be used as part of an antidegradation review.

This discharger was present prior to September 30, 2000, and therefore the influence of this discharger must be evaluated in the BWQ determination. However, downstream data are not available and therefore the BWQ must be based on a combination of the effluent and upstream water quality data.

The following equation is used to determine BWQ using upstream data and the influence of the discharger:

$$BWQ = \frac{M_{eff} Q_{eff} + M_{u/s} Q_{u/s}^{**}}{Q_{eff} + Q_{u/s}}$$

Where,

- $Q_{u/s}$ = Upstream low flow during the AD period **
- $M_{u/s}$ = Upstream ambient water quality during the AD period
- Q_{eff} = 2-year average effluent flow
- M_{eff} = 2-year average effluent pollutant concentration

** The chronic or acute low flow shall be used dependent upon whether a chronic or acute standard exists for the specific parameter. Chronic standards shall normally be used, however, if absent, the acute standard shall be used. Note that the AD low flow is discussed below.

Antidegradation Low Flow

The period of record of the data used to establish low flows during the AD evaluation generally differ from the period of record of the low flows discussed in Section III of this analysis. Low flows for the antidegradation review were determined based on the same approach and using data from the same location as discussed in Section III, but the period of record was limited to January 1, 1998 through December 31, 2000. The resulting chronic and acute AD low flows are set forth in Table A-9a.

Table A-9a Antidegradation Period Low Flows for Vallecito Creek For BWQ Calculations Based upon Upstream and Effluent Data													
<i>Low Flow (cfs)</i>	<i>Annual</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>
1E3 Acute	9.1	11.0	13.0	14.0	20.0	64.0	50.0	30.0	23.0	38.0	21.0	14.0	9.1
30E3 Chronic	13.0	13.0	13.0	14.0	20.0	64.0	50.0	30.0	30.0	38.0	21.0	14.0	14.0

BWQ concentrations calculated using the above equation also require the determination of the ambient water quality during the antidegradation period, as well as the establishment of the facility contributions during the antidegradation review period.

Currently, it is the Division's approach to evaluate five years of ambient water quality data, if available, for the five years prior to September 30, 2000, when determining the ambient water quality during the antidegradation review period ($M_{u/s}$). Because the ambient water quality data already summarized in Section III of this WQA were available for the same or comparable period of record, the ambient water quality data already summarized in Section III were also used to define the $M_{u/s}$ and therefore are not repeated in this section. These data are summarized in Table A-9b. Note that existing quality is determined as the geometric mean for pathogens and the 85th percentile for other pollutants.

Table A-11b Upstream Ambient Water Quality for Vallecito Creek For BWQ Calculations Based upon Upstream and Effluent Data							
<i>Parameter</i>	<i>Number of Samples</i>	<i>15th Percentile</i>	<i>50th Percentile</i>	<i>85th Percentile</i>	<i>Mean</i>	<i>Location</i>	<i>Notes</i>
E. coli (#/100 ml)	0	1	1	1	1	Upstream	
TRC (mg/l)	0	0	0	0	0	Upstream	

To establish Q_{eff} and M_{eff} , monthly average effluent concentrations as reported on the facility discharge monitoring reports were used. This data were obtained for a period of record from October 1998 through September 2000 and averaged (geometric mean for coliforms).

To establish Q_{eff} and M_{eff} , monthly average effluent concentrations as reported on the facility discharge monitoring reports were used. This data were obtained for a period of record from February 29 through December 2000 and averaged (geometric mean for coliforms). For *E. coli*, no effluent data were available and therefore an effluent concentration equal to 0.32 times the fecal coliform effluent concentration was used, consistent with Division procedure. This data is shown in Table 9c.

Table A-9c Facility Effluent Data for the Antidegradation Period For BWQ Calculations Based upon Upstream and Effluent Data			
<i>Parameter</i>	<i># Samples or Reporting Periods</i>	<i>Ave of Monthly Ave (M_{eff})</i>	<i>Max of Daily Maxs (For estab Implicit NILs)</i>
<i>E. coli</i> (#/100 ml)	12	7	27448
TRC (mg/l)	10	0.16	0.5

Note that the antidegradation requirements outlined in *The Basic Standards and Methodologies for Surface Water* specify that chronic numeric standards should be used in the AD review; however, where there is only an acute standard, the acute standard should be used. Chronic standards were available for all. Thus, the chronic low flows were used for $Q_{u/s}$ for all when establishing BWQ concentrations (Table A-9d).

Table A-9d BWQ Concentrations for Potential Pollutants of Concern Based upon Upstream and Effluent Data						
<i>Pollutant</i>	<i>M_{eff}</i>	<i>Q_{eff} (cfs)</i>	<i>$M_{u/s}$</i>	<i>$Q_{u/s}$ (cfs)</i>	<i>BWQ</i>	<i>WQS</i>
<i>E. coli</i> (#/100 ml)	7	0.03	4.6	13.00	4.6	126
TRC (mg/l)	0.16	0.03	0.0	13.00	0.00034	0.011

For ammonia, BWQ concentrations for total ammonia are calculated by incorporating the average effluent concentrations and average flow, and the ambient water quality and low flows for the antidegradation period into the AMMTOX model and determining the maximum ammonia concentration downstream. Because this model determines the amount of ammonia for every tenth of a mile, for up to 20 miles downstream, a range of values are shown. The range shows the ammonia concentrations at the beginning of the modeled stream segment, to the end of the modeled stream segment. Ambient ammonia for this facility was set to zero, since the data showed very small ammonia concentrations for some months.

Bioaccumulative Significance Test

Parameters associated with the bioaccumulative significance test are not parameters of concern for this facility. This section is therefore omitted.

Significant Concentration Threshold

The SCT is defined as the BWQ plus 15% of the baseline available increment (BAI), and is calculated by the following equation:

$$SCT = (0.15 \times BAI) + BWQ$$

The BAI is the concentration increment between the baseline water quality and the water quality standard, expressed by the term (WQS – BWQ). Substituting this into the SCT equation results in:

$$SCT = 0.15 \times (WQS - BWQ) + BWQ$$

Where,

WQS = Chronic standard or, in the absence of a chronic standard, the acute standard

BWQ = Value from Table A-9d

The AMMTOX model is used to determine the SCTs for ammonia. Because the new ammonia standard is based on a function of the pH and temperature of the receiving stream, the WQS changes moving downstream from a discharge point. The BWQ and the SCT also change moving downstream. The AMMTOX model calculates these values for every tenth of a mile, for up to 20 miles. Therefore, it is impractical to show the SCTs for every part of the stream for all 12 months. These values are available in the AMMTOX model, if requested.

Determination of the Antidegradation Based Average Concentrations

Antidegradation based average concentrations (ADBACs) are determined for all parameters except ammonia, by using the mass-balance equation, and substituting the SCT in place of the water quality standard, as shown in the following equation:

$$ADBAC = \frac{SCT \times Q_3 - M_1 \times Q_1}{Q_2}$$

Where,

Q_1 = Upstream low flow (1E3 or 30E3 based on either the chronic or acute standard)

Q_2 = Current design capacity of the facility

Q_3 = Downstream flow ($Q_1 + Q_2$)

M_1 = Current ambient water quality concentration (From Section III)

SCT = Significant concentration threshold

The ADBACs were calculated using the SCTs, and are set forth in Table A-10a.

ADBACs for total ammonia are calculated by substituting the SCT in place of the chronic standard in the AMMTOX model, which generates monthly ADBACs as shown in Table A-10b.

Table A-10a						
SCTs and ADBACs						
Pollutant	Q_1(cfs)	Q_2 (cfs)	Q_3 (cfs)	M_1	SCT	ADBAC
E. coli (#/100 ml)	16	0.2	16.2	4.6	23	1495
TRC (mg/l)	16	0.2	16.2	0	0.0019	0.15

Table A-10b ADBACs	
<i>Pollutant</i>	<i>Monthly ADBAC</i>
NH ₃ , Total (mg/l) Jan	20
NH ₃ , Total (mg/l) Feb	17
NH ₃ , Total (mg/l) Mar	33
NH ₃ , Total (mg/l) Apr	23
NH ₃ , Total (mg/l) May	150
NH ₃ , Total (mg/l) Jun	120
NH ₃ , Total (mg/l) Jul	70
NH ₃ , Total (mg/l) Aug	60
NH ₃ , Total (mg/l) Sep	28
NH ₃ , Total (mg/l) Oct	35
NH ₃ , Total (mg/l) Nov	28
NH ₃ , Total (mg/l) Dec	22

Concentration Significance Tests

The concentration significance determination test considers the cumulative impact of the discharges over the baseline condition. In order to be insignificant, the new or increased discharge may not increase the actual instream concentration by more than 15% of the available increment over the baseline condition. The insignificant level is the ADBAC calculated in Tables A-11a and A-11b.

Table A-11a Concentration Significance Test			
<i>Pollutant</i>	<i>New WQBEL</i>	<i>ADBAC</i>	<i>Concentration Test Result</i>
E. coli (#/100 ml)	9838	1495	Significant
TRC (mg/l)	0.89	0.15	Significant

Table A-11b Concentration Significance Test for Ammonia			
<i>Pollutant</i>	<i>New WQBEL</i>	<i>ADBAC</i>	<i>Concentration Test Result</i>
NH ₃ , Total (mg/l) Jan	135	20	Significant
NH ₃ , Total (mg/l) Feb	115	17	Significant
NH ₃ , Total (mg/l) Mar	230	33	Significant
NH ₃ , Total (mg/l) Apr	160	23	Significant
NH ₃ , Total (mg/l) May	1,050	150	Significant
NH ₃ , Total (mg/l) Jun	800	120	Significant

NH3, Total (mg/l) Jul	500	70	Significant
NH3, Total (mg/l) Aug	400	60	Significant
NH3, Total (mg/l) Sep	180	28	Significant
NH3, Total (mg/l) Oct	260	35	Significant
NH3, Total (mg/l) Nov	190	28	Significant
NH3, Total (mg/l) Dec	150	22	Significant

For all parameters, the WQBELs are greater than the ADBACs and therefore, the concentration test results in a significance determination, and the antidegradation based effluent limitations (ADBELs) must be determined.

Antidegradation Based Effluent Limitations (ADBELs)

The ADBEL is defined as the potential limitation resulting from the AD evaluation, and may be either the ADBAC, the NIL, or may be based on the concentration associated with the threshold load concentration (for the bioaccumulative toxic pollutants). ADBACs, NILs and TLs have already been determined in the AD evaluation, and therefore to complete the evaluation, a final comparison of limitations needs to be completed.

Note that ADBACs and NILs are not applicable when the new WQBEL concentration (and loading as evaluated in the New and Increased Impacts Test) is less than the NIL concentration (and loading), or when the new WQBEL is less than the ADBAC.

Where an ADBAC or NIL applies, the permittee has the final choice between the two limitations. A NIL is applied as a 30-day average (and the acute WQBEL would also apply where applicable) while the ADBAC would be applied as a 2 year rolling average concentration. For the purposes of this WQA, the Division has made an attempt to determine whether the NIL or ADBAC will apply. The end results of this AD evaluation are in Table A-12, including any parameter that was previously exempted from further AD evaluation, with the final potential limitation identified (NIL, WQBEL or ADBAC).

Table A-12				
Final Selection of WQBELs, NILs, and ADBACs				
<i>Pollutant</i>	<i>NIL</i>	<i>New WQBEL</i>	<i>ADBAC</i>	<i>Chosen Limit</i>
E. coli (#/100 ml)	277	9838	1495	ADBAC
TRC (mg/l)	0.069	0.89	0.15	ADBAC
NH3 as N, Tot (mg/l) Jan	NA	135	20	ADBAC
NH3 as N, Tot (mg/l) Feb	NA	115	17	ADBAC
NH3 as N, Tot (mg/l) Mar	NA	230	33	ADBAC
NH3 as N, Tot (mg/l) Apr	NA	160	23	ADBAC
NH3 as N, Tot (mg/l) May	NA	1050	150	ADBAC
NH3 as N, Tot (mg/l) Jun	NA	800	120	ADBAC

NH3 as N, Tot (mg/l) Jul	NA	500	70	ADBAC
NH3 as N, Tot (mg/l) Aug	NA	400	60	ADBAC
NH3 as N, Tot (mg/l) Sep	NA	180	28	ADBAC
NH3 as N, Tot (mg/l) Oct	NA	260	35	ADBAC
NH3 as N, Tot (mg/l) Nov	NA	190	28	ADBAC
NH3 as N, Tot (mg/l) Dec	NA	150	22	ADBAC

For all parameters, the ADBACs have been established for this facility. The ADBACs were selected as they are less stringent than the WQBELs and the NILs, or perhaps due to the application as a two-year rolling average. However, the facility has the final choice between the NILs and ADBACs, and if the ADBAC is preferred, the permit writer should be contacted.

Alternatives Analysis

If the permittee does not want to accept an effluent limitation that results in no increased impact (NIL) or in insignificant degradation (ADBAC), the applicant may conduct an alternatives analysis (AA). The AA examines alternatives that may result in no degradation or less degradation, and are economically, environmentally, and technologically reasonable. If the proposed activity is determined to be important economic or social development, a determination shall be made whether the degradation that would result from such regulated activity is necessary to accommodate that development. The result of an AA may be an alternate limitation between the ADBEL and the WQBEL, and therefore the ADBEL would not be applied. This option can be further explored with the Division. See Regulation 31.8 (3)(d), and the Antidegradation Guidance for more information regarding an alternatives analysis.

VIII. Technology Based Limitations

Federal Effluent Limitation Guidelines

The Federal Effluent Limitation Guidelines for domestic wastewater treatment facilities are the secondary treatment standards. These standards have been adopted into, and are applied out of, Regulation 62, the Regulations for Effluent Limitations.

Regulations for Effluent Limitations

Regulation No. 62, the Regulations for Effluent Limitations, includes effluent limitations that apply to all discharges of wastewater to State waters, with the exception of storm water and agricultural return flows. These regulations are applicable to the discharge from the proposed discharge.

According to Part 62.4(2) of the Regulations for Effluent Limitations "If the Commission has not so promulgated effluent limitation guidelines for any particular industry, but that industry is subject to effluent limitation guidelines promulgated by the United States Environmental Protection Agency pursuant to the Federal Water Pollution Control Act of 1972, the effluent from these industries shall be subject to the applicable EPA guidelines and shall not be subject to the effluent limitations of Regulation 62.4." Therefore, the limitation for oil and grease in Regulation 62.5 (10 mg/l) shall not apply to this discharge.

Table A-13 contains a summary of the applicable limitations for pollutants of concern at this facility.

Table A-13			
Regulation 62 Based Limitations			
Parameter	30-Day Average	7-Day Average	Instantaneous Maximum
BOD ₅	30 mg/l	45 mg/l	NA
BOD ₅ Percent Removal	85%	NA	NA
TSS, mechanical plant	30 mg/l	45 mg/l	NA
TSS Percent Removal	85%	NA	NA
Total Residual Chlorine	NA	NA	0.5 mg/l
pH	NA	NA	6.0-9.0 s.u.
Oil and Grease	NA	NA	10 mg/l

IX. References

Regulations:

The Basic Standards and Methodologies for Surface Water, Regulation 31, Colorado Department Public Health and Environment, Water Quality Control Commission, effective January 1, 2012.

Classifications and Numeric Standards for San Juan River and Dolores River Basins, Regulation No. 34, Colorado Department Public Health and Environment, Water Quality Control Commission, effective June 2012.

Colorado River Salinity Standards, Regulation 39, CDPHE, WQCC (last update effective 8/30/97)

Regulations for Effluent Limitations, Regulation 62, CDPHE, WQCC, March 30, 2008.

Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List, Regulation 93, Colorado Department Public Health and Environment, Water Quality Control Commission, effective April 30, 2010.

Policy and Guidance Documents:

Antidegradation Significance Determination for New or Increased Water Quality Impacts, Procedural Guidance, Colorado Department Public Health and Environment, Water Quality Control Division, December 2001.

Memorandum Re: First Update to (Antidegradation) Guidance Version 1.0, Colorado Department Public Health and Environment, Water Quality Control Division, April 23, 2002.

Rationale for Classifications, Standards and Designations of Segments of the San Juan River, Colorado Department Public Health and Environment, Water Quality Control Division, effective September, 2012.

Policy Concerning Escherichia coli versus Fecal Coliform, CDPHE, WQCD, July 20, 2005.

Colorado Mixing Zone Implementation Guidance, Colorado Department Public Health and Environment, Water Quality Control Division, effective April 2002.

Policy for Conducting Assessments for Implementation of Temperature Standards in Discharge Permits, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WQP-23, effective July 3, 2008.

Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WQP-24, effective March 10, 2008.

Policy for Characterizing Ambient Water Quality for Use in Determining Water Quality Standards Based Effluent Limits, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WQP-19, effective May 2002.

Total maximum Daily Load Assessment A Watershed Based Approach for the Upper Animas River Basin. CDPHE Water Quality Control Division. December 2002.